

REMARKS

Claims 1-5 are amended, Claims 17-20 are cancelled and Claims 21-23 are added. Claims 1-16, as amended, and new Claims 21-23 remain in the application. No new matter is added by the amendments to the claims.

The Rejections:

The Examiner rejected Claims 1, 2 and 8-13 under 35 U.S.C. 102(e) as being anticipated by Nakagaki et al. U.S. Patent No. 6598707.

Regarding Claim 1, the Examiner stated that Nakagaki discloses an elevator installation having a car, referred to as cage 20, and a counterweight 30 connected by a drive means, referred to as front and back hoist cables 50, 60, and movable in a shaft 7 comprising a pair of car guides 22, 23 adapted to be mounted in the shaft 7, a pair of counterweight guides 31, 32 adapted to be mounted in the shaft, a crossbeam, referred to as connecting beam 33, attached to the counterweight guides 31, 32 and to car guide 22, and a drive motor, referred to as hoist 41, mounted on the crossbeam 33 and coupled to a pair of drive pulleys, referred to as front and back traction sheaves 44, 45, adapted for engaging the drive means 50, 60 to move the car 20 and the counterweight 30 in the shaft.

Regarding Claim 2, the Examiner stated that Nakagaki further discloses the drive pulleys 44, 45 are arranged on opposite sides of an imaginary line horizontal connector of the car guides 22, 23.

Regarding Claim 8, the Examiner stated that Nakagaki further discloses the counterweight guides 31, 32 and the car guide 22 are positioned at apices of a substantially horizontal triangle and the crossbeam 33 is fastened at end regions to the counterweight guides 31, 32 and at a center region to the car guide 22.

Regarding Claim 9, the Examiner stated that Nakagaki further discloses the car guides 22, 23 and counterweight guides 31, 32 are arranged to extend substantially vertically in the shaft and the crossbeam 33 is arranged to extend substantially horizontally in the shaft.

Regarding Claim 10, the Examiner stated that Nakagaki further discloses an elevator installation having a car, referred to as cage 20, and a counterweight 30 connected by a drive means, referred to as front and back hoist cables 50, 60, and movable in a shaft comprising an
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elevator shaft 7, an elevator car 30 movable in the shaft 7 along a pair of car guides 22, 23 mounted in the shaft 7, a counterweight 30 movable in the shaft 7 along a pair of counterweight guides 31, 32 mounted in the shaft 7, a crossbeam, referred to as connecting beam 33, attached to the counterweight guides 31, 32 and one of the car guides 22, and a gearless drive motor, referred to as hoist 41, mounted on the crossbeam 33 for engaging the drive means 50, 60 and moving the car 20 and the counterweight 30 in the shaft 7.

Regarding Claim 11, the Examiner stated that Nakagaki further discloses two drive means 50, 60 connecting the car 20 and the counterweight 30, each drive means 50, 60 having two ends, referred to as anchoring ends 53, 57, 63, 67, and each of the ends 53, 57, 63, 67 being fixed to one of the car guides 23, via cage-side hitching beam 25, and the crossbeam 33.

Regarding Claim 12, the Examiner stated that Nakagaki further discloses two drive means 50, 60 connecting the car 20 and the counterweight 30 and wherein the drive means 50, 60 are belts.

Regarding Claim 13, the Examiner stated that Nakagaki further discloses the car 20 is suspended in the shaft 7 with a 2:1 ratio and the drive motor 41 is arranged in a region above a travel path of the counterweight 30 in the shaft 7, shown in Figures 1, 2, 4, and 5.

The Examiner rejected Claims 1, 3, 5, 6, 9-12 and 16 under 35 U.S.C. 102(e) as being anticipated by Yasuda et al. U.S. Patent No. 6488124.

Regarding Claim 1, the Examiner stated that Yasuda discloses an elevator installation having a car 101 and a counterweight 102 connected by a drive means, referred to as ropes 111, and movable in a shaft 103 comprising a pair of car guides 104 adapted to be mounted in the shaft 103 a pair of counterweight guides 105 adapted to be mounted in the shaft 7, a crossbeam, referred to as support beam 108, attached to the counterweight guides 105, via connecting beams 106, and to the car guides 104, via connecting beam 106, and a drive motor 126 mounted on the crossbeam 108 and coupled to a pair of drive pulleys, referred to as driving traction sheaves 110, adapted for engaging the drive means 111 to move the car 101 and the counterweight 102 in the shaft 103.

Regarding Claim 3, the Examiner stated that Yasuda further discloses the drive pulleys 110 are operatively connected by a shaft, referred to as output shaft 125, with the drive motor 126 and a brake 118.

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Regarding Claim 5, the Examiner stated that Yasuda further discloses the drive motor 126 and the brake 118 are mounted on a bracket, referred to as support legs 120, fastened to the crossbeam 108.

Regarding Claim 6, the Examiner stated that Yasuda further discloses the bracket 120 is mounted at a center region of the crossbeam 108.

Regarding Claim 9, the Examiner stated that Yasuda further discloses the car guides 104 and counterweight guides 102 are arranged to extend substantially vertically in the shaft 103 and the crossbeam 108 is arranged to extend substantially horizontally in the shaft 103.

Regarding Claim 10, the Examiner stated that Yasuda further discloses an elevator installation having a car 101 and a counterweight 102 connected by a drive means, referred to as ropes 111, and movable in a shaft 103 comprising an elevator shaft 103, an elevator car 101 movable in the shaft 103 along a pair of car guides 104 mounted in the shaft 103, a counterweight 102 movable in the shaft 103 along a pair of counterweight guides 105 mounted in the shaft 103, a crossbeam, referred to as a support beam 108, attached to the counterweight guides 105, via connecting beams 106, and to the car guides 104, via connecting beams 106, and a gearless drive motor 126 mounted on the crossbeam 108 for engaging the drive means 111 and moving the car 101 and the counterweight 102 in the shaft 103.

Regarding Claim 11, the Examiner stated that Yasuda further discloses two drive means 111 connecting the car 101 and the counterweight 102, each drive means 111 having two ends and each of the ends being fixed to the counterweight 102, via rope hitch 112, and the car 101, via rope hitch 113.

Regarding Claim 12, the Examiner stated that Yasuda further discloses two drive means 111 connecting the car 101 and the counterweight 102 and wherein the drive means 111 are belts.

Regarding Claim 16, the Examiner stated that Yasuda further discloses the car 101 is suspended in the shaft 103 with a 1:1 ratio and the drive motor 126 is arranged in a region above a travel path of the car 101, shown in Figures 4-6 20, 21A, 21 B, and 31-33.

The Examiner rejected Claims 4 and 7 under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. in view of Cox U.S. Patent No. 3559768.

Regarding Claim 4, the Examiner stated that Yasuda discloses drive pulleys 110, a drive motor 126 and a brake 118. The Examiner admitted that Yasuda is silent concerning the drive

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pulleys arranged between a drive motor and a brake. The Examiner further stated that Cox teaches drive pulleys, referred to as traction sheaves 11, 25, arranged between a drive motor, referred to as an electric motor 14, and a brake 15 and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the pulleys disclosed by Yasuda between a drive motor and a brake as taught by Cox to equally distribute the load on the shaft between the drive motor, drive pulleys, and the brake.

Regarding Claim 7, the Examiner stated that Yasuda discloses drive pulleys 110 and brackets 120. The Examiner admitted that Yasuda is silent concerning the drive pulleys arranged substantially in a region within an enclosure of the bracket. The Examiner further stated that Cox teaches drive pulleys 11, 25 arranged substantially in a region within an enclosure of the brackets, not numbered but shown attached to of the elevator shaft shown in Figure 1 and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive pulleys disclosed by Yasuda et al. substantially in a region within an enclosure of the bracket to make the drive pulleys readily accessible with the bracket.

The Examiner rejected Claims 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Yasuda.

Regarding Claim 14, the Examiner stated that Nakagaki discloses a car 20 suspended in a shaft 7 with a 2:1 ratio and a drive motor 41. The Examiner admitted that Nakagaki is silent concerning a drive motor arranged in a region above a travel path of the car. The Examiner further stated that Yasuda teaches a car 101 suspended in a shaft 103 with a drive motor 126 arranged in a region above a travel path of the car 101, shown in Figures 4-6 20, 21A, 21B, and 31-33 and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive motor disclosed by Nakagaki in a region above a travel path of a car as taught by Yasuda to overcome elevator shaft size and shape constraints.

Regarding Claim 15, the Examiner stated that Nakagaki discloses a car 20 suspended in a shaft 7 with a 2:1 ratio and a drive motor 41. The Examiner admitted that Nakagaki is silent concerning a drive motor arranged in a region above a travel path of the car and a travel path of the counterweight. The Examiner further stated that Yasuda teaches a car 101 suspended in a shaft 103 with a drive motor 126 arranged in a region above a travel path of the car 101 and a travel path of the counterweight 102, shown in Figures 4-6 20, 21A, 21B, and 31-33 and it would

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have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive motor disclosed by Nakagaki in a region above a travel path of a car and a travel path of a counterweight as taught by Yasuda to overcome elevator shaft size and shape constraints.

Applicants' Response:

Applicants amended Claims 1, 9, 10 and 13-16 to distinguish between the elevator shaft and the drive shaft connecting the drive motor to the drive pulleys.

Applicants amended Claim 1 to include the subject matter of original Claims 3 and 4. Applicants amended Claim 3 to define a diameter of the drive pulleys. Support for this amendment is found on Page 5 at Lines 4-5. Applicants amended Claim 4 to define a position of the drive pulleys relative to one of the car guides. Support for this amendment is found on Page 5 at Lines 3-4, on Page 8 at Lines 9-11 and Lines 22-25 and in Figs 2, 3, 5, 7 and 9.

Applicants rewrote cancelled method Claims 17-20 as new apparatus Claims 21-23 respectively.

Amended Claim 1 defines the drive pulleys as being arranged between and connected to the drive motor and the brake. This arrangement is shown in Figs. 2, 3, 5 and 7. Amended Claim 10 defines the drive pulleys as being adjacent one another and positioned on opposite sides of one of the car guides. This arrangement is shown in Figs. 2 and 3. New Claim 21 defines the drive pulleys as being adjacent one another on opposite sides of an imaginary line connector extending between the car guides. This arrangement is shown in Figs. 2, 3, 5, 7 and 9.

Nakagaki shows traction sheaves 44, 45 that are positioned on opposite sides of a hoist 41 and connected to drive shafts 42, 43 respectively. Thus, the Nakagaki traction sheaves are not arranged between and connected to the drive motor and the brake as defined by Applicants' Claim 1. The Nakagaki traction sheaves are not adjacent one another and positioned on opposite sides of one of the car guides as defined by Applicants' Claim 10. The Nakagaki traction sheaves are not adjacent one another on opposite sides of an imaginary line connector extending between the car guides as defined by Applicants' Claim 21.

In a configuration similar to Nakagaki, Yasuda shows traction sheaves 110 positioned on opposite sides of a drive motor 126 and connected to a pair of drive shafts 125. Thus, the Yasuda traction sheaves are not arranged between and connected to the drive motor and the brake

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as defined by Applicants' Claim 1. The Yasuda traction sheaves are not adjacent one another and positioned on opposite sides of one of the car guides as defined by Applicants' Claim 10. The Yasuda traction sheaves are not adjacent one another on opposite sides of an imaginary line connector extending between the car guides as defined by Applicants' Claim 21.

Cox shows a single traction sheave 11 connected between an electric motor 14 and a brake drum 15 by a shaft 12. The Examiner suggested it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the pulleys disclosed by Yasuda between a drive motor and a brake as taught by Cox to equally distribute the load on the shaft between the drive motor, drive pulleys, and the brake. However, Yasuda teaches that the traction sheaves 110 are positioned between the shaft wall and the car wall so as not to interfere with the car at the top of the elevator shaft and provide space savings (Col. 7, Lines 23-34). Thus, there is no motivation to substitute the Cox configuration and lose the Yasuda advantages.

Applicants' Claim 7 defines the drive motor and the brake being mounted on a bracket fastened to the crossbeam and wherein the drive pulleys are arranged substantially in a region within an enclosure of the bracket. As shown in Fig. 2, the drive pulleys 3, 3' are positioned inside the bracket 7 defined by the mounts 7.1, 7.2 and the struts 7.3, 7.4. The Examiner stated that Cox teaches drive pulleys 11, 25 arranged substantially in a region within an enclosure of the brackets, not numbered but shown attached to of the elevator shaft shown in Figure 1. Cox shows one bracket on the opposite side of the motor 14 from the traction sheave 11 and another bracket on the opposite side of the brake drum 15 from the traction sheave. However, these brackets are separate and do not form an enclosure for the traction sheave 11.

Regarding Claim 12, the Examiner stated that Yasuda further discloses two drive means 111 connecting the car 101 and the counterweight 102 and wherein the drive means 111 are belts. Yasuda clearly identifies the elements 111 as ropes, not belts (Col. 6, Lines 47-52).

In summary, there is no combination of the cited references that shows or suggests the invention defined by Claims 1-16 and 21-23.

The Examiner stated that the prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The Examiner cited the Japanese Publication No. 2002-167137 which represents the foreign application from which Nakagaki claims priority.

Applicants reviewed this reference and found it to be no more pertinent than the prior art relied upon by the Examiner in the rejections.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.

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